PATHOLOGY AND FINE STRUCTURE OF *AMESON* SP., A MICROSPORIDIAN FROM THE BLUE SAND CRAB, *PORTUNUS PELAGICUS*

Microsporidian parasites of crabs were first described by Perez (1904) in the muscle and haemolymph tissues of the common shore crab, *Carcinus muenas* (L.). To date, only 11 microsporidians representing 6 genera have been reported or described from brachyuran crabs. The few reports of microsporidian infections in crabs may be a result of their low prevalence in host populations, the low abundance or crypticism of certain host populations, a lack of expertise in identifying the disease, and/or a lack of proper fixatives in field situations (Shields, pers. obs.). In 1989 the authors found a microsporidian parasite in the musculature of *Portunus pelagicus*. Characteristics of the parasite placed it firmly in the genus *Ameson* (diplokaryotic meront, moniliform sporont, unikaryotic spore, isofilar polar tube, microtubules projecting from the exospore of the sporoblast and spore). *Ameson* sp. from *P. pelagicus* is the twelfth microsporidian reported from a brachyuran host; a full description is in preparation (Shields, unpubl.).

The prevalence of *Ameson* sp. in the observed population of *P. pelagicus* was approximately 3.0% (N = 205 crabs). The protozoan caused massive destruction of infected muscle which was flaccid, and had a milky appearance common to this disease. Necrotic muscles contained meronts, sporoblasts, and spores. *Ameson* sp. spores were also found in the blood cells and the ovaries. The parasite was found intracellularly in the sarcoplasm of host muscle cells. Microtubules found on the exospore of sporoblasts and spores were in close proximity to host mitochondria, and may be used to transport nutrients into the cytoplasm of the parasite. Adjacent uninfected muscle was largely unaffected.

Attempts were made to maintain the life cycle of the microsporidian in the laboratory. Infected muscle tissues were macerated and mixed thoroughly in a mixture of one part seawater to two parts freshwater. The supernatant was injected directly into the axilla of the fifth pereiopod of 9 crabs (0.5 mL supernatant/crab). An additional 4 crabs were injected with the seawater-freshwater solution as a control. Infected muscle was also fed to seven crabs that had been without food for 3 weeks.

Crabs injected with spores developed acute disease in approximately 21 days. Spores were detected in injected crabs after 7 days. Crabs that were fed infected tissues did not develop the disease. *Ameson michaelis* from *Callinectes sapidus* is transmitted via cannibalism of infected hosts (Overstreet, 1978). The failure of this route of infection with *Ameson* sp. from *P. pelagicus* may have resulted from the poor quality of meat that was presented to experimental crabs.

Literature Cited

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DAILY AND MONTHLY SETTLEMENT PATTERNS OF BRACHYURAN MEGALOPAE ON ARTIFICIAL SUBSTRATES

Postlarval recruitment appears to be a major factor that determines density of adult stocks for several crustacean species. If the population dynamics of marine species are driven by recruitment, then an understanding of recruitment processes and associated spatial and temporal variability is important if accurate predictions of population size are to be achieved. The objectives of the present study were: 1) to compare the temporal patterns of postlarval brachyuran settlement in a South Carolina estuary with settlement patterns in other estuaries that are separated over a broad geographic scale; and 2) to relate settlement peaks to periodic (lunar, tidal, light phase) and chance (wind) events.

Megalopae were collected every 5 days from artificial substrates at a site in Charleston Harbor, South Carolina from July 1987 through October 1988. In 1989, daily samples were taken from July through November at the same site, as well as in the York River and Tangier Island, Virginia (by Robert Orth and Jacques Van Montfrans, Virginia Institute of Marine Science) and in Delaware Bay (Charles Epifanio, University of Delaware) as part of a regional settlement study.

At the South Carolina site, 19 taxa settled on the artificial substrates, with *Callinectes sapidus*, *Uca* spp., and *Panopeus herbstii* numerically dominating collections. Although megalopae were present year-round, except during March, the greatest settlement of blue crab occurred from August through October. Settlement patterns were highly episodic and suggested a pulsed recruitment to the study area. Considerable variability in the magnitude of settlement was observed among years. Temperature and wind direction were the only factors which related to increased number of megalopae. Megalopae were significantly more numerous at night and displayed a semi-lunar pattern of settlement with peak numbers occurring on quarter moons.

When the temporal settlement patterns observed in 1989 were compared among sites, a coherent pattern of settlement on a broad spatial scale emerged, with a major peak in the first week of September. What appears to be more variable and less predictable than the timing of settlement is its magnitude, which differs considerably among years and locations and has implications for variability in fishery stock size among the regions. Data from the regional study suggest that large-scale climatic and hydrographic conditions may be influencing settlement. The spatial and temporal dynamics associated with settlement events can provide insights into factors structuring blue crab populations and may actually indicate limits to year-class strength.

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